

TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: BEJ-PWFSA3

Equipment Under Test : Wi-Fi / BLE Combo Module
Model Name : PWFSA3
Variant Model Name(s) : -
Applicant : LG Electronics USA
Manufacturer : LG Electronics Inc.
Date of Receipt : 2020.10.17
Date of Test(s) : 2020.11.18 ~ 2020.12.06
Date of Issue : 2020.12.21

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

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Tested by:



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SGS Korea Co., Ltd. Gunpo Laboratory

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

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- Designation number: KR0150

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1.2. Details of Applicant

Applicant : LG Electronics USA

Address : 1000 Sylvan Avenue, Englewood Cliffs, New Jersey, United States, 07632

Contact Person : Han, Kyung-Su

Phone No. : +1 201 472 2623

1.3. Details of Manufacturer

Company : LG Electronics Inc.

Address : 170, Seongsanpaechong-ro, Seongsan-gu, Changwon-si, Gyeongsangnam-do,
Korea (Republic of), 51533

1.4. Description of EUT

Kind of Product	Wi-Fi / BLE Combo Module
Model Name	PWFSA3
Power Supply	DC 5 V, 12 V
Frequency Range	2 412 MHz ~ 2 462 MHz (11b/g/n_HT20) 2 402 MHz ~ 2 480 MHz (Bluetooth Low Energy)
Antenna Type	Dielectric Chip antenna
Antenna Gain	1.94 dB i
H/W Version	1.0
S/W Version	1.0

1.5. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL001492	2020.12.18	Initial
1	F690501-RF-RTL001492-1	2020.12.21	Corrected the antenna gain.

2. RF Exposure Evaluation

2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1 500	-	-	f/300	6
1 500-100 000	-	-	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1 500	-	-	f/1500	30
1 500-100 000	-	-	1.0	30

2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data

Test Mode : Normal Operation

2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

WLAN (2.4 G)

- Maximum tune up tolerance

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
2 400 ~ 2 4835.	18	1.94	0.019 621	1

Bluetooth Low Energy

- Maximum tune up tolerance

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
2 400 ~ 2 4835.	9	1.94	0.002 470	1

Note;

- The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm².
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 cm between the radiator and your body.
- The antenna gain of this transmitter is less than 6 dB i and must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.
- According to KDB 447498 D01 RF Exposure Guidance 4.1.

Simultaneous transmission of RF Exposure test exclusion for worst case configuration.

WLAN: the ratio is 0.019 621 / 1

Bluetooth Low Energy: the ratio is 0.002 470 / 1

Confirm the sum result of individual MPEs ratio is ≤ 1.0;

WLAN + Bluetooth Low Energy: (0.019 621 / 1) + (0.002 470 / 1) = 0.022 091 ≤ 1.0

- End of the Test Report -